BAY AREA AIR QUALITY MANAGEMENT DISTRICT
939 ELLIS STREET
SAN FRANCISCO, CA 94109

CEQA INITIAL STUDY
(Revised January 2002)

BACKGROUND

Project

Proposed amendments to BAAQMD Regulation 5: Open Burning

Lead Agency

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Contact Person

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Project Location

This proposed amendments apply within the area covered by the Bay Area Air Quality Management District. The District includes all of seven counties - Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, and Napa - and portions of two others - southwestern Solano and southern Sonoma.

Project Description

The proposal consists of amendments to existing District Regulation 5. Regulation 5 was originally adopted as the BAAQMD's first regulation in 1957. The regulation (then called Regulation 1) was primarily intended to regulate open burning of trash, a common practice in the Bay Area at the time. The regulation was subsequently amended several times and was expanded to cover a much broader range of burning activities. In 1980, the regulation was recodified as Regulation 5.

This project is a revision to an earlier proposal. In addition to the amendments to Regulation 5 that constitute this project, the earlier proposal also included amendments to Regulation 3: Fees. The amendments to Regulation 3 would have required the payment of fees to the BAAQMD for prescribed burning and

marsh burning. The amendments to Regulation 3 have been dropped from the current project. A negative declaration for the earlier proposal was circulated from October 8 to October 29, 2001. That negative declaration was recirculated for comment by state agencies from November 16 to December 17, 2001. This document is a revision of the earlier negative declaration.

The proposed Regulation 5 amendments would primarily affect Marsh Management fires and Wildland Vegetation Management fires ("prescribed burning"). The amendments apply requirements for Wildland Vegetation Management fires to four other types of fires if the fire is greater than 10 acres in size or burns material from more than 10 acres: (1) Forest Management fires, (2) Range Management fires, (3) Hazardous Material fires other than those required to comply with section 4291 of the California Public Resources Code (which requires creation of firebreaks by means that can include burning), and (4) Crop Replacement fires for the purpose of establishing an agricultural crop on previously uncultivated land. These four fire types are considered prescribed burning under the revised Agricultural Burning Guidelines in Title 17 Subchapter 2 of the California Code of Regulations (the "new Guidelines"), which were adopted by the California Air Resources Board and recently became effective.

For Marsh Management fires, the proposal would require, effective June 1, 2002, all marsh burners to (1) submit a smoke management plan at least 30 days prior to a proposed burn and receive APCO approval of the plan before burning; (2) receive an acreage burning allocation from the APCO prior to burning, instead of from the Solano County Sheriff's Dispatch; and (3) report the acreage and tonnage actually burned to the APCO no later than 12:00 p.m. the day after burning occurs. In addition, the amendments make more explicit a requirement in existing law (Cal. Health and Safety Code Section 41861; current Section 401.13 of Regulation 5) that a determination of the necessity of the burn be obtained from the California Department of Fish and Game (DFG) before each burn. The Health and Safety Code has required since 1975 that the DFG provide the APCO with a written determination of necessity for each burn. The Regulation 5 amendments would require that marsh burners submit information from their land management plans to assist DFG in determining whether a burn is "desirable and proper" as it is required to do by the Health and Safety Code Section 41861.

For Wildland Vegetation Management fires, the proposal would require prescribed burners to (1) provide additional, more specific information in prescribed burn plans submitted to the District; (2) prior to ignition, receive an acreage burning allocation from the APCO on each day of a burn; (3) effective June 1, 2002, report the acreage and tonnage actually burned to the APCO no later than 12:00 p.m. the day after burning occurs; and (4) submit a post-burn evaluation of the burn project within 30 days after completion.

In addition, effective June 1, 2002, any fire official who would conduct a naturally-ignited wildfire managed for resource benefits (a type of prescribed burning) that is expected to exceed 10 acres must annually register the project in writing with the APCO prior to December 31, with updates as they occur; and provide a smoke management plan to the APCO upon request.

Regulation 5 currently requires (Section 5-408.4) that prescribed burners report acreage or tonnage of vegetation burned within 30 days after a burn. Effective June 1, 2002, both prescribed burners and marsh burners would be required to maintain specified records that document and verify actual acreage burned on a daily basis. These records must also be maintained for at least twelve months and be made available to the APCO upon request.

The Regulation 5 proposal also revises the definition of prescribed burning to include any Forest Management fire, Range Management fire, Hazardous Material fire that is not related to Public Resources Code section 4291 (which requires creation of firebreaks for hazard reduction), and any Crop Replacement fire for the purpose of establishing an agricultural crop on previously uncultivated land if the fire is expected to exceed 10 acres in size or burn piled vegetation generated from more than 10 acres of land. In effect, this revision would subject the above fires to the same requirements as Wildland Vegetation Management fires.

Additional Regulation 5 amendments proposed would: (1) modify compliance standards to include certain existing requirements not clearly enforceable in other provisions of the regulation; (2) restrict and clarify existing burn hours for all allowable fires; (3) require tree trunks and stumps to be cut or split before burning to prevent overnight smoldering; and (4) conditionally allow fire training burns at night and public exhibition burns on no-burn days. These proposed amendments are intended to improve the clarity and enforceability of the regulation, address open burning issues identified since 1994 when the regulation was last revised, and minimize the potential adverse impacts caused by excessive smoke from open burning activities in the District.

The proposed amendments would affect public and private landowners that conduct marsh burning, prescribed burning, or other allowable open burning activities. Some local, state, and federal public fire protection and resource management agencies in the District would also be affected. Some examples of the public agencies affected by the proposed amendments include the Suisun Resource Conservation District, the California Departments of Fish & Game, Forestry & Fire Protection, Parks & Recreation, the National Park Service, U. S. Fish & Wildlife Service, Bureau of Land Management, county fire departments and local fire districts.

This initial study is being conducted to determine if the proposed amendments to Regulation 5 may have a significant effect on the environment. The study that

follows includes an assessment that identifies and evaluates this proposal's potential adverse environmental impacts. The study also provides documentation of the factual basis for a formal finding of the potential impacts and the type of CEQA document that will be prepared for this proposal.

Environmental Setting

The Bay Area Air Quality Management District encompasses the counties of Alameda, Contra Costa, Marin, Napa, San Francisco, Santa Clara and portions of western Solano and Southern Sonoma, totaling approximately 5,600 square miles. The Bay Area physiograpy is characterized by a large shallow basin surrounded by coastal mountain ranges tapering into sheltered inland valleys. The combined climatic and topographic factors present in the Bay Area result in an increased potential for accumulation of air pollutants in the inland valleys and a reduced potential for buildup of air pollutants along the coast.

The climatology of the Bay Area, in combination with the topography and pollutant emissions, determines the atmospheric pollution potential. The atmospheric pollution potential is the potential for a given quantity of air emissions to be dispersed as a result of the combined influence of atmospheric and geographic conditions, either lowering or increasing the potential for exceedances of ambient air quality standards. In the Bay Area there is a wide range of atmospheric pollution potential resulting predominantly from four factors; winds, atmospheric stability, solar radiation and sheltering terrain.

Winds can disperse pollutants. Atmospheric pollution potential increases in the sheltered valleys of the Bay Area because the terrain tends to reduce wind speeds. Reduced wind speed in the valleys combined with daytime up-valley and nighttime down-valley air flow can result in the accumulation of pollutants. Temporally, these low wind speeds usually occur in conjunction with periods of high pollution emissions, typically during the early morning and late afternoon or evening commute traffic, and on clear, cold winter nights.

Whereas winds are indicative of horizontal dispersion of air pollution, atmospheric stability determines the ability of air pollutants to dispersed vertically. In the Bay Area, the ability of air pollutants to be dispersed vertically is frequently limited by inversions. An inversion, a blanket of warm air trapping a layer of cooler air underneath, forms an almost impenetrable barrier to the vertical dispersion of air pollutants at the boundary between the two air masses. Inversions result from a variety of climatic factors and the different types of inversion have a wide seasonal variation.

Between late spring and early fall, a layer of warm air often overlays a layer of cool air from the Delta and San Francisco Bay, resulting in an inversion. Typical winter inversions are formed when the sun heats the upper layers of air, trapping below them air that has been cooled by contact with the colder surface of the earth during

the night. Although each inversion type predominates at certain times of the year, both types can occur at any time of the year. Local topography produces many variations that can affect the inversion base and thus influence local air quality.

The BAAQMD is classified as an attainment area for the federal ambient air quality standards for particulate matter of 10 microns in size and smaller (PM10), and a non-attainment area for the California ambient air quality standard for PM10.

Other Approvals Required

None

Environmental Factors Potentially Affected

A check beside an impact category below indicates that, for the category, this project involves at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

_____ Aesthetics	_____ Agriculture Resources	_____ Air Quality
_____ Biological Resources	_____ Cultural Resources	_____ Geology / Soils
_____ Hazards/Hazardous Mat'l	_____ Hydrology/Water Quality	_____ Land Use/Planning
_____ Mineral Resources	_____ Noise	_____ Population/Housing
_____ Public Services	_____ Recreation	_____ Transportation/Traffic
_____ Utilities/Service Systems	_____ Mandatory Findings of Significance	

__X__ No Potentially Significant Impacts

DETERMINATION

On the basis of this initial evaluation:

__X__ I find the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

_____ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

_____ I find the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

_____ I find the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

_____ I find that, although the proposed project could have a significant effect on the environment, there WILL NOT be a significant effect in this case because all potentially significant effects (1) have been analyzed adequately in an earlier EIR pursuant to applicable standards, and (2) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures from the EIR that are imposed upon the proposed project.

_____ _____

William H. Guy Date

Principal Air Quality Specialist

ENVIRONMENTAL IMPACT CHECKLIST

(Note: All answers are explained on attached sheets.)

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
1. Aesthetics. Would the proposal:				
a. Have a substantial adverse effect on a scenic vista?				X
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c. Substantially degrade the existing visual character or quality of the site and its surroundings?				X
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?				X
2. Agriculture Resources. Would the proposal:				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				X
3. Air Quality. Would the proposal:				
a. Conflict with or obstruct implementation of the applicable air quality plan?				X

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	_____	_____	_____	X
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	_____	_____	_____	X
d. Expose sensitive receptors to substantial pollutant concentrations?	_____	_____	_____	X
e. Create objectionable odors affecting a substantial number of people?	_____	_____	_____	X
4. Biological Resources. Would the project:				
a. Have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	_____	_____	_____	X
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	_____	_____	_____	X
c. Have a substantial adverse effect on federally-protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	_____	_____	_____	X

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	_____	_____	_____	X
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	_____	_____	_____	X
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	_____	_____	_____	X
5. Cultural Resources. Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	_____	_____	_____	X
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	_____	_____	_____	X
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	_____	_____	_____	X
d. Disturb any human remains, including those interred outside of formal cemeteries?	_____	_____	_____	X
6. Geology and Soils. Would the project:				
a. Expose people or structure to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to the Division of Mines and Geology Special Publication 42)	_____	_____	_____	X

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
ii. Strong seismic ground shaking?				X
iii. Seismic-related ground failure, including liquefaction?				X
iv. Landslides?				X
b. Result in substantial soil erosion or the loss of topsoil?				X
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?				X
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				X
e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X
7. Hazards and Hazardous Materials. Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?				X
c. Emit hazardous materials or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment?	_____	_____	_____	X
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	_____	_____	_____	X
f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	_____	_____	_____	X
g. Impair the implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?	_____	_____	_____	X
h. Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	_____	_____	_____	X
8. Hydrology and Water Quality. Would the project:				
a. Violate any water quality standards or waste discharge requirements?	_____	_____	_____	X
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net reduction in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	_____	_____	_____	X

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	_____	_____	_____	X
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	_____	_____	_____	X
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	_____	_____	_____	X
f. Otherwise substantially degrade water quality?	_____	_____	_____	X
g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	_____	_____	_____	X
h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	_____	_____	_____	X
i. Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	_____	_____	_____	X
j. Inundation by seiche, tsumani, or mudflow?	_____	_____	_____	X
9. Land Use and Planning. Would the project:				
a. Physically divide an established community?	_____	_____	_____	X

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	_____	_____	_____	X
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	_____	_____	_____	X
10. Mineral Resources. Would the project:				
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	_____	_____	_____	X
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	_____	_____	_____	X
11. Noise. Would the project result in:				
a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	_____	_____	_____	X
b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	_____	_____	_____	X
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	_____	_____	_____	X
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	_____	_____	_____	X

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	_____	_____	_____	X
f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	_____	_____	_____	X
12. Population and Housing. Would the project:				
a. Induce substantial growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	_____	_____	_____	X
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	_____	_____	_____	X
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	_____	_____	_____	X
13. Public Services. For any of the following public services, would the project require the construction of new or physically-altered governmental facilities to maintain acceptable service ratios, response times, or other performance objectives, thereby producing significant environmental impacts:				
a. Fire protection?	_____	_____	_____	X
b. Police protection?	_____	_____	_____	X
c. Schools?	_____	_____	_____	X
d. Parks?	_____	_____	_____	X
e. Other public facilities?	_____	_____	_____	X

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
14. Recreation.				
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	_____	_____	_____	X
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	_____	_____	_____	X
15. Transportation and Traffic. Would the project:				
a. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?	_____	_____	_____	X
b. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	_____	_____	_____	X
c. Produce a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	_____	_____	_____	X
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersection) or incompatible uses (e.g., farm equipment)?	_____	_____	_____	X
e. Result in inadequate emergency access?	_____	_____	_____	X
f. Result in inadequate parking capacity?	_____	_____	_____	X
g. Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	_____	_____	_____	X

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
16. Utilities and Service Systems. Would the project:				
a. Exceed the wastewater treatment requirements of the applicable Regional Water Quality Control Board?				X
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?				X
e. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?				X
g. Comply with federal, state, and local statutes and regulations related to solid waste?				X

	Potentially Significant Impact	Less Than Significant With Mitigation	Less Than Significant Impact	No Impact
17. Mandatory Findings of Significance.				
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	_____	_____	_____	X
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	_____	_____	_____	X
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	_____	_____	_____	X

DISCUSSION OF ENVIRONMENTAL IMPACTS

Proposed Amendments to Regulation 5: Open Burning

Introduction

This section of the Initial Study explains the reasons for checking the particular items checked in the checklist. Explanations are provided both for those items involving some potential impact and those for which no impact is anticipated.

Some of the discussion below is based in part on the Final Program EIR for the Vegetation Management Program (for California) prepared by the California Department of Forestry and Fire Protection, April 2000, and is hereby incorporated by reference. In particular, the discussions regarding Biological Resources and Hazards and Hazardous Materials draw heavily from the CDF document. The citations to references included in the CDF EIR have been omitted from the discussions herein, but can be found in that EIR.

The discussion of air quality impacts draws heavily from an EIR prepared by the Monterey Bay Unified Air Pollution Control District (MBUAPCD) to assess the potential environmental effects that could occur as a result of adopting a Smoke Management Program. Though the MBUAPCD program differs greatly from the BAAQMD program because MBUAPCD is the direct permitting authority for prescribed burning within that air district, the discussion of air quality impacts is relevant to the BAAQMD program in describing the potential smoke impacts that the BAAQMD program is intended to mitigate.

Background

This project consists of amendments to existing Regulation 5: Open Burning, which prohibits open burning activities in the District with certain exceptions.

Current BAAQMD Requirements

The District first regulated open burning in 1957 under Regulation 1 because of its considerable contribution to Bay Area air pollution. In 1980, after several revisions and as the number of other District regulations increased, Regulation 1 was recodified as Regulation 5. The last revisions to Regulation 5 were adopted in 1994.

Currently, Regulation 5 generally prohibits open burning within the District except for specific exceptions that conditionally allow fires on permissive burn days at certain times of the year. The exceptions or allowable fire types include both agricultural and non-agricultural fires.

For each day of the year, the District issues either a permissive burn day or no-burn day notice. District staff in the Meteorology and Data Analysis Section of the Technical Services Division makes this determination based on the meteorological conditions forecasted and criteria for the San Francisco Bay Area Air Basin. The criteria are based on the ability of smoke to rise and dissipate without causing ground level impacts. The burn day forecast is usually available by 3:00 p.m. for the following day. However, if conditions are warranted for a delayed burn decision, the forecast is made by 7:30 a.m. the following day. A permissive burn or no-burn day notice is issued for three forecast zones in the District, the North, South and Coastal Sections. In addition, for burns above elevations of 2000 feet in a section with a no-burn decision, a permissive burn day will be declared if specific meteorological criteria are met.

The District currently charges no fees for open burning and pays for its burn forecast program and its Regulation 5 enforcement activities out of general funds.

State Regulation

Assembly Bill (AB) 16 (Ketchum), Chapter 1579 of the Statutes of 1970, directed the California Air Resources Board (ARB) to establish guidelines for the control and regulation of agricultural burning by the air districts in California (see California Health and Safety Code Sections 41850 *et seq*.). Originally, agricultural burning was defined as open outdoor fires used in agricultural operations in the growing of crops or the raising of fowl or animals. In 1971, pursuant to AB16, the ARB established Agricultural Burning Guidelines for the burning of waste produced during agricultural operations (these Agricultural Burning Guidelines can be found in sections 80100 *et seq.* of Title 17 of the California Code of Regulations). The Agricultural Burning Guidelines have been modified many times since 1971. Major changes include amending the definition of agricultural burning to include open burning for the improvement of wildlife and game habitat and again for wildland vegetation management. The Agricultural Burning Guidelines were also amended to improve the quality of data reported by air districts and to improve management of smoke from rice straw burning in the Sacramento Valley (the Sacramento Valley Basinwide Agricultural Burning Plan).

State law prohibited agricultural burning without a permit issued by the agency designated by the California Air Resources Board to issue permits for the area in which the burning is to take place.

On March 23, 2000, ARB adopted amendments to the State's Agricultural Burning Guidelines, which are now titled "Smoke Management Guidelines for Agricultural and Prescribed Burning." ARB staff developed the new guidelines for several reasons:

- Increases in prescribed burning are planned by land management agencies on public and private lands throughout California over the next two decades. Though significant increases may occur in many areas in California, only minor increases above current levels are expected in the Bay Area. The planned increases are intended to correct unhealthy wildland ecosystems and reduce the risk of catastrophic wildfires in areas with excessive vegetative fuel loads, which are the unintentional result of past fire suppression policies and strategies. More effective smoke management is needed to minimize or prevent the potential public health and air quality impacts posed by these increases.

- Smoke emissions from wildfires and increased prescribed burning threaten California's ability to meet requirements for health-based air quality standards for fine particulate matter ($PM_{2.5}$), coarser particles (PM_{10}) and new federal regional haze requirements that call for improvements in visibility in designated Class 1 Areas (national parks, monuments, wilderness areas, etc.).

- Closer communication and collaboration between prescribed burners, CARB and local air districts is needed to prevent short-term, high-impact smoke episodes caused by prescribed burning activities.

- Population growth and increased urbanization of rural areas and agricultural lands have increased the potential for smoke impacts from prescribed burning and agricultural burning. Combined with the expected increases in prescribed burning on neighboring public lands and in urban-wildland interface areas, more intensive management of these fires is needed to reduce the potential for smoke impacts.

The effective date of the final regulation order amending the guidelines is March 14, 2001. The amended guidelines require local air districts to develop and implement a smoke management program that meets specific requirements of the guidelines.

The District is exempt from agricultural burning provisions of the state smoke management guidelines because the legislation governing the state guidelines grandfathered existing open burning programs through California Health and Safety Code section 41864. That section grandfathers any program, such as the BAAQMD program, "in effect for five or more years prior to September 19, 1970." The California Air Resources Board has maintained that this exemption does not extend to the Title 17 provisions regarding prescribed burning. Regardless whether the ARB legal position is correct, the BAAQMD has committed to implementing various provisions of Title 17 relating to prescribed burning.

The environmental impacts of Title 17 amendments were reviewed in an environmental analysis prepared by the Air Resources Board in 2000 for the Title

17 amendments. That analysis was prepared pursuant to Public Resources Code section 21159, which requires the Air Resources Board and air districts to prepare an environmental analysis of the reasonably foreseeable methods of compliance with certain rules and regulations. The ARB analysis determined that the Title 17 amendments "would not pose significant adverse environmental impacts." They further found that the Title 17 amendments would "reduce smoke-related health impacts" while improving "collaboration among all affected parties in order to reduce institutional and regulatory roadblocks that hinder the ability of local, State and federal agencies to meet their mutual environmental goals." The analysis recognized the importance of fire as an effective tool to improve ecosystem health and to reduce the risk of wildfires.

Prescribed Burning in the Bay Area

In the Bay Area, prescribed burning occurs in every county within the District's boundaries except for the city and county of San Francisco. Over the last three years, the majority of prescribed burns occurred in Marin and Contra Costa counties, followed by Santa Clara, Alameda, San Mateo, Napa, Sonoma and Solano counties. These fires were primarily conducted on public lands during the summer months from June through September, although several burns in Marin County also occurred during April, October, November and December.

The primary fire agencies or land management agencies that conduct prescribed burning in the District include the California Department of Forestry & Fire Protection (CDF), California Department of Parks & Recreation, Marin County Fire Department, U.S. Fish & Wildlife Service, and the National Park Service. Other notable burners that are allowed to conduct prescribed burns through a cooperative agreement or contract involving a state or federal agency include the East Bay Regional Park District and the Marin Municipal Water District.

In 2000, the District approved 23 prescribed burn plans authorizing the burning of 6950 acres, and 830 acres were ultimately burned that year. The table below sets forth data for these burns. Many of the approved burn plans were never carried out.

Agency	Contact	Burn Name	StartDate	EndDate	Burn Dates	Acres OK'd	Acres Burned
CDF/Napa County Fire	Dana Cole	Pickett	1/1/00 12/15/00	1/31/00 12/31/00	N/a	2087	None
CDF	David Wachtel	Mt. Mocho	1/1/00 7/15/00	4/1/00 12/31/00	N/a	1200	None
CDF/CA Parks & Recreation	David Wachtel	Kelly Cabin	10/15/00	12/31/00	N/a	700	None
Marin County Fire/CDF	Kent Julin	Lakeside (RX-1-044-MRN)	8/15/00	12/15/00	N/a	342	None
CDF	David Wachtel	Grant Ranch	6/15/00	11/15/00	N/a	200	None
Marin County Fire/CDF	Kent Julin	Marinview Urban-Wildland Interface	10/1/00	12/30/00	N/a	6.2	None

Agency	Contact	Burn Name	StartDate	EndDate	Burn Dates	Acres OK'd	Acres Burned
Marin County Fire/CDF	Kent Julin	Kent Woodlands I (RX-1-046-MRN)	10/1/00	12/30/00	12/7-12/9, 12/16, 12/17	31	7
City of Gilroy/CDF	Chris Weske	Uvas Creek	6/15/00	7/31/00	7/11/00	1.5	1.5
U.S. Fish & Wildlife Service	Roger Wong	Antioch Dunes	6/15/00	6/30/00	6/21/00	11	11
CDF	Bruce Beck	Russian Ridge	7/1/00 9/15/00	8/31/00 10/15/00	N/a	200	None
EBRPD/CDF	Robert Bouska	Briones	6/22/00	8/31/00	6/30, 7/3, 7/5, 7/6, 7/17, 7/19	670	496.43
EBRPD/CDF	Robert Bouska	Round Valley	6/15/00	8/31/00	6/22, 6/23, 6/26	50	31
EBRPD/CDF	Robert Bouska	Carquinez	6/22/00	8/31/00	7/21, 8/7, 8/11	190	180
MMWD/Marin County FD	Michael Swezy	Rock Spring	7/1/00	7/31/00	7/11/00	16	8
MMWD/Marin County FD	Michael Swezy	Peters Dam	7/10/00	8/15/00	7/20/00	8	8
CDF	Bruce Beck	Upper Gazos Creek	9/15/00	12/31/00	N/a	20	None
National Park Service	Ben Jacobs	McDonald Omnibus	10/1/00	12/15/00	N/a	263	None
Marin County Fire/CDF	Kent Julin	Taylor Trail/Fairfax Grade	9/13/00	10/31/00	10/16/00	58	26
EBRPD/CDF	Robert Bouska	Coyote Hills	10/5/00	11/15/00	10/5,10/20	250	60
CDF	Mike Gagarin	Kamchatka Point	10/1/00	10/31/00	N/a	1	None
CDF	David Wachtel	Giacolone	12/1/00	12/31/00	N/a	265	None
CDF	David Wachtel	Locarnini	12/1/00	12/31/00	N/a	300	None
CA Parks & Recreation	George Gray	Portola Redwoods State Park	12/1/00	12/31/00	N/a	80	None
					Totals	**6949.7**	**828.93**

The table below shows how prescribed burning in 2000 compared with prior years.

Year	# Plans Approved	Acres Authorized	Acres Burned
2000	23	6950	829
1999	30	8616	1130
1998	25	3467	949
1997	21	1681	674

Marsh Burning in the Bay Area

Marsh burning in the Bay Area occurs primarily within the Suisun Resource Conservation District. This burning takes place during a spring burn season from February to the end of March and a fall burn season from September to mid-October.

In 2000, marsh burning was conducted on 930 acres during the spring burn period and on 580 acres during the fall burn period, for a total of 1510 acres. The table below sets forth data for 2000 and earlier years.

Year	Acres Burned		
	Spring	Fall	Total
2000	930	580	1510
1999	1022	419	1441
1998	142	350	492
1997	895	502	1397

Effect of Proposed Amendments on Burning

The table below lists every section of Regulation 5 for which substantive amendments (rather than clarifying or grammatical amendments) are proposed, describes the section amended, describes the effect of the amendment, and indicates whether the amended requirement parallels a Title 17 provision. Following the table is a discussion of the substantive changes and whether those regulatory changes represent any change from existing policy or other requirements.

Reg. 5 Section	Description of Section	Effect of Amendment	Parallel Title 17 Provision
110.3	Exemption for flame cultivation	Clarifies that the use of flame cultivation to kill live seedling grass and weeds is not limited to orchards vineyards and field crops	None
111	Conditional exemption that imposes restrictions on those fire types allowed by the regulation	Adds language to allow prescribed burn plan to supercede specific requirements of this section and its subsections	None
111.1	See above	Prohibits burns before 10:00 am except as superceded by plan	§80145(a), (o); §80160
111.2	See above	Clarifies that fuel addition or burning after two hours prior to sunset except as superceded by plan	§80145(a), (o); §80160
111.4	See above	Requires that tree trunks and stumps be cut into small sections except as superceded by plan	§80145(a), (o)

Reg. 5 Section	Description of Section	Effect of Amendment	Parallel Title 17 Provision
208	Definition of "hazardous material"	Clarifies language and eliminates language made unnecessary by sunsetting of waste propellant burning under §401.14	N/a
213	Definition of "prescribed burning"	Expands definition of "prescribed burning" to include forest management, range management, hazardous material, and crop replacement fires above 10 acres in size	§80101(a)
221	Definition of "forest"	Defines "forest" for purpose of clarifying meaning of "forest management" fire in §401.12	N/a
222	Definition of "marshland"	Defines "marshland" for purpose of clarifying meaning of "marsh management" fire in §401.13	N/a
301	Prohibition against burning not conducted in conformity with Reg. or plan required by Reg.	Defines as a violation any burning in excess of a burn acreage allocation or that does not conform with a prescribed burn plan or smoke management plan	§80145(a), §80160
401.2	Administrative requirements for crop replacement fires	Requires prior notification pursuant to §406 for this fire type	§80145(a), (g), (h)
401.3	Administrative requirements for orchard pruning and attrition fires	Allow shorter drying time than permitted by §111.4 so that pruning can be conducted later, thereby reducing likelihood of disease transmission; requires prior notification pursuant to §406 for this fire type	§80145(a), (g), (h), (o)
401.4	Administrative requirements for double cropping stubble fires	Requires prior notification pursuant to §406 for this fire type	§80145(a), (g), (h)
401.6	Administrative requirements for hazardous material fires	Prohibits burning of material that could be removed by vehicle; prohibits piled material burns before 9:30 am	§80145(a), (o)
401.7	Administrative requirements for fire training fires	With prior notice, allows these fires to be conducted outside burn hour limits of §111.1 and 111.2	None
401.8	Administrative requirements for flood debris fires	Requires prior notification pursuant to §406 for this fire type	§80145(a), (g), (h)
401.12	Administrative requirements for forest management fires	Requires prior notification pursuant to §406 for this fire type	§80145(a), (g), (h)
401.13	Administrative requirements for marsh management fires	Requires approval of smoke management plan required by §410 and compliance with acreage burning allocation; modifies existing acreage allocation system	§80145(a), (g), (h); §80160
401.16	Administrative requirements for wildland vegetation management fires	Effective June 1, 2002, prohibits fires on no-burn days	§80110(d)

Reg. 5 Section	Description of Section	Effect of Amendment	Parallel Title 17 Provision
401.17	Administrative requirements for public exhibition fires	Requires that APCO approval be secured through §409 petition process; allows these burns to be conducted on no-burn days	None
406	Prior District notification requirements for specified fire types	Adds crop replacement, orchard pruning and attrition, double cropping stubble, forest management, and flood debris fires to fire for which prior notification to the District is required; eliminates verbal notification	§80145(a), (g), (h)
408	Administrative requirements for prescribed burns	Effective June 1, 2002, requires smoke management plan after it is decided that a naturally-ignited fire will be managed for resource benefits	§80160(a), (i)
408.1	Administrative requirements for prescribed burns	New requirements for prescribed burn plans: (1) plan must specify contingency actions to reduce smoke exposure, (2) smoke management plan element must comply with federal policy, (3) copy of any environmental impact document prepared for burn must be included, (4) estimate of fuel to be consumed must be included, and (5) estimate of particulate emissions must be included	§80160(b), (c), (d)
408.2 408.3	Administrative requirements for prescribed burns	Requires that permission for prescribed burning be governed by acreage burning allocation	§80145(a), §80160
408.4	Administrative requirements for prescribed burns	Requires daily reporting of acreage actually burned	§80145(h)
408.5	Administrative requirements for prescribed burns	Requires post burn smoke evaluation report	§80160(k)
409	Petition requirement for filmmaking and public exhibition burns	Adds public exhibition fires to fire types subject to petition requirement	None
410	Administrative requirements for marsh management burns	Requires submission of smoke management plan, information on alternatives to burning, and Dept. of Fish and Game necessity determination in order to receive acreage burning allocation	§80145(a), (g), (h); §80160; Cal. Health and Safety Code §41861
501	Record keeping requirements	Requires that those who conduct prescribed burns and marsh burns keep daily records of acreage burned	§80145(h)

The proposed amendments primarily affect two types of burning: prescribed burning and marsh burning. The sections below discuss in detail how the amendments affect requirements for prescribed burning and marsh burning.

Effect of Amendments on Prescribed Burning

For prescribed burning, the amendments have two primary effects. First, they impose an explicit daily acreage allocation system on prescribed burning. Second, they add a number of minor requirements for the burn plans that are already required by the regulation. Each of these areas is discussed below.

For prescribed burning, the primary effect of the amendments is to impose an explicit daily acreage allocation system on prescribed burning. Although there is currently no explicit acreage allocation system for prescribed burning set forth in Regulation 5, the regulation already gives the APCO (in Section 111.9) authority to impose restrictions for all fire types on "tonnage, volume or acreage of material burned on any given day and/or at any specified site." Prescribed burners are currently required to submit prescribed burn plans pursuant to Section 408 of Regulation 5. District staff review each prescribed burn plan and, where appropriate, impose acreage limitations as a condition of approval. As a result there is, under the existing regulation, a *de facto* acreage allocation system. In 2000, for example, the District reviewed and approved 23 prescribed burn plans. For seven of the proposed burns, the District imposed daily acreage limitations as a condition of approval. For most of the burns, the District also imposed requirements on meteorological conditions that would, for example, restrict burning under specified wind conditions and would have the same effect as an acreage allocation system. This is because, under an acreage allocation system, very limited or no burning is allowed when there are undesirable meteorological conditions.

Under the current regulation, permission to start a prescribed burn is governed by a 48-hour forecast. If an approved prescribed burn plan includes no limiting prescriptions, a fire may be conducted even on a no-burn day if it was given a "go" in the 48-hour forecast. However, the current regulation (Section 401.16) gives the APCO approval authority for prescribed burn plans and the power to impose conditions on approval. District practice for many burns has been to include as a condition of plan approval a provision that limits burning to permissive burn days only, even where the applicant sought approval under the 48-hour system. In 2000, 7 of the 10 prescribed burns carried out (and 785 of the 829 acres burned) were subject to conditions limiting burning to permissive burn days. If the burn is limited to permissive burn days, the burner may get a "go" forecast the day before a burn but must wait to the morning of the burn to ensure that all prescriptions can be met. As a result, because most of these burns were already subject to daily "go"/"no-go" determinations, the change to an explicit daily acreage allocation system is not expected to have any significant effect on amounts of acreage burned or on burn planning, staging, and execution.

The other change in prescribed burning requirements is the addition of new elements to be included in prescribed burn plans. Under the existing regulation, the following nine elements are required to be included in a prescribed burn plan:

1. Location and specific objectives of each proposed burn;
2. Acreage or tonnage, type, and arrangement of vegetation to be burned;
3. Directions and distances to nearby sensitive receptor areas;
4. Fuel condition, combustion and meteorological prescription elements for the project;
5. Projected schedule and duration of project ignition, combustion, and burn down;
6. Specifications for monitoring and of verifying critical parameters;
7. Specifications for disseminating project information;
8. Certification by a resource ecologist, biologist, or forester that the proposed burning is necessary to achieve the specific management objective(s) of the burn plan; and
9. Smoke management plan.

The amendments would add the following new requirements:

1. The plan must specify contingency actions to reduce smoke exposure;
2. The smoke management plan element must comply with federal policy;
3. A copy of any environmental impact document prepared for burn must be included with the plan;
4. An estimate of fuel to be consumed must be included; and
5. An estimate of particulate emissions must be included.

The new elements are included to implement Title 17 requirements. None of these new requirements would require significant new work that would have any potential to delay or force cancellation of a prescribed burn. The first three new elements would ensure, however, that adequate consideration is given to means to minimize adverse impacts from smoke. The fourth and fifth requirements are simple calculations based on the estimated quantity of vegetation to be burned, which is information already required to be included in plans.

In light of the foregoing discussion, the Regulation 5 amendments are not expected to change amounts or types of prescribed burning in the Bay Area. The primary reason, as noted above, is that the amendments simply make more explicit an existing regulatory program for prescribed burning. Though they make an daily acreage allocation system explicitly applicable to prescribed burning, such a system is already in effect and is authorized by the existing regulation. The amendments clarify current practice and make it more certain, predictable, and enforceable. Because of the increased certainty and clarity, the regulation should provide for better coordination between the District and prescribed burners. The amendments are not likely to result in the delay or cancellation of prescribed burns. Most delays or cancellation result from lack of resources

(firefighters and equipment) or from the limitations imposed through the burn plan prescriptions (such as wind speed or direction requirements). The Regulation 5 provisions relating to District authority to impose these conditions are unchanged by the proposed amendments.

Where the amendments do make changes in requirements for prescribed burning, those changes are not expected to produce changes in amounts or types of burning. The changes primarily add new required elements for prescribed burn plans. But, as discussed above, the new requirements only require minor additional documentation to be added to a plan package and should not result in any significant problems or delay.

Effect of Amendments on Marsh Burning

For marsh burning, the amendments have three primary effects. First, they modify the existing daily acreage allocation system for marsh burning. Second, they require that burners submit a smoke management plan to the APCO. Third, they add a requirement that burners consider alternatives to burning and provide that information to the Department of Fish and Game (DFG), which is required by current law (Cal. Health and Safety Code Section 41861) to certify that a burn is "necessary and proper" and provide that certification to the APCO. Each of these areas is discussed below.

For marsh burning, there is already an explicit acreage allocation system in place in current Section 401.13. For areas outside of the Suisun Resource Conservation District (SRCD), where burning occurs infrequently, the regulation prohibits the burning of more than 100 acres of a property in a single day. Within the SRCD, where most of the burning occurs, a marsh burner must receive an acreage allocation from the Solano County Sheriffs' Dispatch. The total daily acreage allocation is developed by District meteorologists and forwarded to the Solano County Sheriff. As a backstop, the current regulation states that the total acreage that can be burned throughout the SRCD on a single day may not exceed 300 acres in the fall and 600 acres in the spring. In addition, no more than 100 acres of a single property or series of properties may be burned in a day. Under the current regulation, these fires may be conducted only on permissive burn days. The amendments would simply relieve the Solano County Sheriff of responsibility for making the sub-allocations to individual burners. This change therefore has no potential to change the amount or type of burning.

The second proposed change in marsh burning requirements is that marsh burners would be required to submit a smoke management plan to the APCO. District staff have worked with SRCD and landowners within the SRCD to develop a simple one-page form that would be used for the plans. Under the current regulation, the only paperwork required of a burner is information required by DFG to verify land area burning frequencies. The proposed smoke management plan would require submission of a single additional form. This

simple form is not expected to impose such a burden to affect amounts of marsh burning.

The third proposed change in marsh burning requirements is that marsh burners would be required to submit information on alternatives to burning in securing the burning necessity statement from the California Department of Fish and Game. This necessity statement has been required from marsh burners since legislation added Section 41861 to the Health and Safety Code in 1975. The proposed amendments ensure that DFG receives adequate information regarding proposed burns so that it can assess the necessity for each burn. This information will also be provided to the APCO. Though this Regulation 5 requirement would impose an administrative requirement on burners, the requirement is implicit in existing law. Since this requirement is implicit in existing law, the amendment is not expected to change in any way the amount of marsh burning carried out. Even if the amendment imposed a new burden, burners will be filling out a simple smoke management plan, and the information on alternatives could easily be provided to DFG and the APCO at the same time the smoke management plan is provided to the APCO.

The following sections discuss whether the Regulation 5 amendments are likely to have environmental impacts, given the discussion above regarding ways in which the amendments may affect existing practices.

Discussion of Environmental Impacts

The primary environmental effect of these amendments is to reduce potential adverse air quality impacts from prescribed burning in the Bay Area, while at the same time, allowing the benefits of prescribed burning to continue unchanged. This prescribed burning is expected to have environmental benefits through improving wildlife habitats, improving the health of ecosystems by removing destructive non-native vegetation, and reducing risks of uncontrolled fires.

1. Aesthetics

Open burning activities do have the potential to impact aesthetics. However, the proposed amendments are not expected to change the total amount or types of open burning that are presently occurring or are expected to occur in the District. Fire agencies currently plan increases in the amount of prescribed burning. Those increases are not part of this project. However, these amendments are expected to mitigate some of the adverse impacts from the increase in prescribed burning through a system to more clearly regulate acreage burned and to ensure compliance with conditions on burning. Though increased burning could affect scenic vistas, the effect of these amendments would be to minimize those impacts. Thus, no scenic vistas, scenic resources, or any existing visual character or quality will be adversely impacted by this proposal. There will be no

new source of light or glare created. As such, no aesthetics impacts are anticipated.

2. Agriculture Resources

The proposed amendments will not affect farming operations since they do not alter existing requirements for agricultural burning. No prime, unique, or important farmland will be impacted and there will be no conflicts with existing zoning for agricultural use or a Williamson Act contract. There will also be no changes that might result in the conversion of farmland to non-agricultural use. Based on these considerations, no agriculture resources impacts are anticipated due to the proposed amendments.

3. Air Quality

Prescribed burning and marsh burning primarily affect air quality as a source of elevated particulate matter and toxic pollution in areas nearby and downwind from burns. These practices are not a significant source of these pollutants when viewed from a regional perspective or as a percentage of Bay-Area-wide emissions on a daily average or annual average basis. For example, the PM10 emissions from prescribed burning represent less than 0.1% of total PM10 emissions on an average day. Yet downwind from a burn, PM10 levels can be high enough to cause serious health effects.

Key health effects categories associated with PM include:

- premature mortality
- aggravation of respiratory and cardiovascular disease as indicated by increased hospital admissions, emergency room visits, school absences, work loss day, and restricted activity
- changes in lung function and increased respiratory symptoms
- changes to lung tissues and structure and
- altered respiratory defense mechanisms.

According to EPA, the recent epidemiological information indicates that several subpopulations are apparently more sensitive to effects of community air pollution containing PM. Observed effects include decreases in pulmonary function reported in children and increased mortality reported in the elderly and individuals with cardiopulmonary disease.

A 2000 Health Effects Institute study conducted by Dr. Jonathan M. Samet of Johns Hopkins School of Public Health (*The National Morbidity, Mortality, and Air Pollution Study, Part II: Morbidity and Mortality from Air Pollution in the United States*) examined the impacts of air pollution on health. Major findings include:

- The results of both the 20 cities and 90 cities analyses are generally consistent with an average approximate 0.5% increase in over-all mortality for every 10 $\mu g/m^3$ increase in PM_{10} measured the day before death.
- Effects of PM_{10} measured on the day of death or 2 days before did not vary substantially from one another for total or for heart and lung deaths. The PM_{10} effect on mortality also did not appear to be affected by other pollutants in the model.
- Some difference in PM_{10} effect on mortality were seen by region of the US: for the 90 cities, the largest effect was evident in the Northeast.
- The morbidity analysis also used a unified analytic method to examine the association of PM_{10} with hospitalization of those 65 years of age or older in 14 cities with daily PM_{10} measurements. The results were consistent with an approximate 1% increase in admissions for cardiovascular disease and about a 2% increase in admissions for pneumonia and chronic obstructive pulmonary disease for each 10 $\mu g/m^3$ increase in PM_{10}

Burning of vegetation also emits numerous toxic air contaminants (TACs) including, but not limited to, acetaldehyde, acrolein, aluminum, benzene, bromine, 1,3-butadiene, chloroform, dioxins, copper, ethyl benzene, formaldehyde, furans, hexane, lead, manganese, methylene, nitrogen dioxide, chrysene, phenol, phosphorous, styrene, toluene, xylenes, and zinc. Based on prescribed burn modeling undertaken by the Monterey Bay Unified Air Pollution Control District, acrolein is the TAC of primary concern because of its potential to create unhealthful pollutant levels offsite. Acrolein is a semi-volatile organic compound that is emitted as a combustion by-product from the burning of vegetation. For chaparral burning, acrolein emissions are about 1% of PM_{10} when estimated on a pound per ton of fuel consumed.

Another potential source of toxic emissions is from the use of herbicides prior to prescribed burning. In these projects, herbicide residue in the smoke could create a health hazard for project staff or people downwind of a project. Field studies in the southern United States evaluated the presence of residue from hexazinone and triclopyr in a series of prescribed burns. In 10 separate projects, vegetation was treated with one of these herbicides 30-170 days before prescribed burning. Smoke was monitored during the burning and no airborne residues of herbicides were detected in any of the samples collected in these studies. Similarly, no glyphosate residues were detected in prescribed burns conducted in Oregon. Test of glyphosate determined that when the chemical burns, 28% becomes carbon ash, 25% water, 4% acetonitrile, and 43% carbon dioxide and phosphorus pentoxide. If all of the available glyphosate formed phosphorus pentoxide, and if enough atmospheric moisture were present to convert all of the phosphorus pentoxide to phosphoric acid, the maximum exposure would be nine time lower than the threshold value for phosphoric acid. The maximum possible exposure level for acetonitrile would be 7,000 times lower than the threshold value.

The level at which adverse health effects can be experienced as the result of exposure to toxic air contaminants is described as the reference exposure level (REL) as established by the Office of Environmental Health Hazards Assessment. Acute RELs are for 1 - 6 hours of exposure while chronic RELs are for annual exposure. The acute REL for acrolein is 0.19 $\mu g/m^3$. Eye irritation in healthy human volunteers occur at this level. Additionally, persons with pre-existing eye, skin, respiratory, allergic, asthmatic or heart diseases might be at increased risk due to acrolein exposure. Individuals with cystic fibrosis or asthma should be excluded from acrolein exposure. Chronic RELs are not addressed here because exposure to emissions from prescribed fires would be short-term.

Studies by the Monterey Unified Air Pollution Control District indicate that acrolein has the highest risk level of all modeled pollutants from prescribed burning, including $PM_{10.}$ Addressing acrolein risks would address the risks of the other pollutants. The acute REL for acrolein is 0.19 $\mu g/m^3$.

Whether or not a particular burn will create an exceedance of the acrolein REL in inhabited areas depends on a number of factors including specific setting of each burn, amount and type of fuel consumed, fuel moisture, burn duration, terrain setting, actual plume behavoir and the meteorological conditions under which the prescription allows the burn to be conducted.

There is not a large body of information available regarding the spatial extent of acrolein impacts due to prescribed fire. Recent modeling of a 50 acre burn at the former Fort Ord in Monterey County that was conducted under adverse meteorological conditions indicates that the REL exceedance extended approximately 8.0 km (5.0 miles) from the downwind perimeter of the burn site. This may represent a worst case scenario for the downwind extent of acrolein REL exceedances.

As discussed extensively above (see the discussion under “Effect of Proposed Amendments on Burning”), the proposed amendments to Regulation 5 are not expected to change amounts or types of prescribed and marsh burning in the Bay Area. The amendments are, however, expected to have a beneficial air quality impact by reducing potential smoke impacts through enhanced smoke management measures. As a result, no significant air quality impacts are expected. The proposed amendments will not adversely change the air quality impacts from open burning activities in the District. The proposal will not (1) conflict with or obstruct implementation of an applicable air quality plan; (2) violate any air quality standard or contribute to an existing or projected air quality violation; (3) result in a cumulative net increase of any criteria pollutant; (4) expose sensitive receptors to substantial pollutant concentrations; and (5) create objectionable odors affecting a substantial number of people. The proposed amendments will also not diminish an existing air quality rule or future compliance requirement.

4. Biological Resources

Potential Effects of Prescribed and Marsh Burning on Biological Resources

It is clear from a large body of research that prescribed and marsh burning can have beneficial impacts on wildlands and wildlife habitats*. The regulation of prescribed burning can therefore have adverse impacts if it would reduce those benefits. It is also clear, however, that prescribed burning can have adverse impacts if it is conducted inappropriately. To the extent that Regulation 5 prevents the inappropriate use of prescribed burning, it can produce benefits.

Fire has long been a natural feature of California's landscape. As a result, many of California's biological communities have evolved with, and developed adaptations for, recurring fire. The plant communities subject to prescribed burning treatments have been subject to periodic fires for at least the last 10,000 years. Fire has been a driving force in the dynamics of these communities, and many plant species have evolved in the presence of recurrent fires. Before European settlement, fire in California's wildlands was primarily the result of lightning strikes during thunderstorms or fires set by Native Americans. Because some of California's native species have evolved to reproduce most successfully following exposure to fire, the health and viability of some common and rare natural communities are dependent on fire.

The term "rare natural community" refers to those plant communities that are considered important because of their high species diversity and richness, high productivity, unusual nature, limited distribution, or declining status or come combination of these qualities. There are various rare natural communities known to occur in the Bay Area region. Some of these natural communities benefit from prescribed burning and could be adversely affected if regulatory changes limit the availability of prescribed burning.

Many special-status species found in the Bay Area are dependent upon the continued existence of fire-adapted natural communities. Special-status species are plants and animals that are legally protected under state and federal Endangered Species Acts and other regulations, or are considered sufficiently rare by the scientific community to qualify for such listing. The Bay Area is rich in wildlife habitat, and is also home to a great variety of special-status species. In a June 2001 report, the U.S. Fish and Wildlife Service found that 105 of the 288 federally listed endangered and threatened species found in California may be found in the Bay Area.

* See Final Program EIR for the Vegetation Management Program (for California) prepared by the California Department of Forestry and Fire Protection, April 2000, and the references cited therein.

Generally, prescribed fire is believed to benefit the overall health of the fire-adapted ecosystem. When conducted at the appropriate time, prescribed fire can open up densely vegetated areas, encourage the growth of suppressed species, contribute to nutrient cycling, increase species diversity, and increase the diversity of vegetation age structure.

However, prescribed fires also hold the potential for various adverse effects. Most common wildlife species in California have evolved with fire as a component of the ecosystem and have developed adaptations to minimize adverse effects. But prescribed burning may result in the avoidance of the project area by common species; direct mortality during project implementation; or indirect mortality, such as increased predation resulting from changes in the habitat. Avoidance of the program area by wildlife species may be short term or long term and would depend on the extent of the change in vegetation.

Direct mortality to individuals of relatively immobile animals without refuges is not unlikely during prescribed fires. Several studies have shown that many invertebrate species that occupy the duff or soil layer of burned areas are susceptible to large reductions in population densities; however, these species are generally widely distributed. Fire may reduce population of amphibians, such as terrestrial salamanders and reptiles. However, many of these species would find refuge from fire by hiding in rock crevices and under large logs.

Few bird species would be directly affected by fire. However, some species that require dense shrub habitat, including spotted towhees and wrentits, may be indirectly affected by the reduction in available shrub cover resulting from a prescribed burn. Some mammals that are dependent on brush cover, including rabbits and small rodents, may have increased mortality from predation following a fire because of the reduction in escape and hiding cover.

Prescribed fires are unlikely to significantly affect common wildlife species that are locally or regionally abundant and widely distributed. Burns would affect only a small portion of the available habitat each year and would not affect substantial portions of local wildlife populations. Additionally, many of these species have high reproductive rates that allow populations to quickly recover from losses of individuals.

Prescribed burning could reduce the availability of large snags and down logs that are important to a wide variety of wildlife species for nesting, hiding, foraging, and resting cover. The loss of some snags in a project areas will not affect a substantial portion of any wildlife population. Larger down logs are unlikely to be adversely affected by prescribed burning activities because the fires will not be hot enough to consume these habitat components.

Many of the rare natural plant communities have been exposed to natural fire. Some rare natural communities, such as cypress forests, bishop pine forest, and

Monterey pine forest, are adapted to fire and require fire to remain viable. Prescribed burns will cause the mortality of some individual plants; however, most woody plants and species with adaptations to fire will persist and the overall vegetative characteristic of the community will be maintained.

Wetland communities will generally not be affected by prescribed burns because of the high moisture content of the vegetation. In dry years during late summer or early fall, some wetland communities (e.g., tule marsh) may burn because of low moisture content of the plants. Under those circumstances, a fire would not substantially reduce survival or mortality of the plants in these communities because the plants would be dormant. However, in riparian communities where previous management activities have created heavy fuel loads, high-intensity fire may occur that could remove extensive amounts of riparian vegetation.

Listed plant species or species proposed for listing that are fire adapted, including fire-resistant and fire-tolerant plants and fire-intolerant increasers (species that are killed by fires but that return to dominate post-fire communities), would not be adversely affected by prescribed burns if the burns occur during the time of year when natural fires occur. Prescribed burning may result in direct mortality or lowered reproductive success of populations or individuals of plants if the burn treatment occurs during the flowering season of the species, at a greater frequency than under natural conditions, or among species that lack adaptations to fire (i.e., fire-intolerant decreases that do not reestablish after a fire).

Prescribed burning may result in direct mortality or lowered reproductive success of other special-status plant species if it occurs during the flowering period of most species or if the plant is not a fire-adapted species. Adverse effects on individual plants or small portions of well-distributed population will not affect the species. Prescribed burning that causes direct mortality to plant species that are food for special-status insects or animals can have a potentially significant impact on these insects or animals.

Effect of Regulation 5 Amendments on Biological Resources

As discussed above, the proposed amendments are not expected to change the amount or types of prescribed and marsh burning in the District or to affect currently planned increases in these activities (see the discussion under “Effect of Proposed Amendments on Burning”). The amendments are therefore not expected to have any environmental impacts on biological resources. Even if the amendments somehow imposed burdens that made burners reduce their future burning, whether this would be an effect under CEQA depends upon what environmental baseline is used to measure the effects. If the baseline is the existing environment as modified in the future by the continuation of current levels of prescribed and marsh burning, it is possible that the amendments could be said to have adverse impacts if they reduced this future burning, assuming the

burning is properly conducted. If the baseline is the current environment unmodified by future burning (which would normally the appropriate CEQA baseline), a reduction in future levels of burning would not produce adverse impacts under CEQA because it would only reduce the beneficial impacts of prescribed burning for wildlife, ecosystems, and fire safety. This is because some scaling back of prescribed burning would still produce net benefits for wildlife, ecosystems, and fire safety when measured against the current environment. But if that scaling back also produces benefits for air quality, the overall benefits may well exceed those of a program that involved more prescribed burning but with adverse impacts on air quality. For purposes of this analysis, it is not necessary to resolve these questions because the amendments are not expected to change amounts of prescribed and marsh burning. As a result, the prescribed burning's expected benefits to biological resources are expected to continue unchanged by the Regulation 5 amendments.

5. Cultural Resources

Impacts in this category are not anticipated because no changes in amounts of prescribed and marsh burning are expected from implementation of the proposed amendments nor is any construction expected to result from the amendments.

6. Geology and Soils

Impacts on geology and soils are not anticipated because no changes in amounts of prescribed and marsh burning are expected from implementation of the proposed amendments nor is any construction expected to result from the amendments.

7. Hazards and Hazardous Materials

Potential Effects of Prescribed Burning on Hazards

Prescribed burning may be used as a vegetation management tool to reduce the hazard from wildfires. The regulation of this burning could therefore have adverse impacts if it would reduce those benefits.

Vegetation management affects fire hazard by reducing fuel loading and/or continuity. Wildland fuel management can take several forms, depending on the predominant vegetation type in the treatment area, fire hazard, land use and residential density, sensitivity of natural resources, and management objectives. Although fire behavior varies with vegetation type, it responds similarly to changes in fuel conditions in all forest and woodland types.

Fuelbreaks have been recommended as part of a strategy for protecting timberland and woodland communities. Fuelbreaks around a community reduce

the risk of fires spreading into the community from adjacent wildlands and vice versa.

Fuelbreaks have relatively low total fuel load, surface fuel depth, and canopy closure, and relatively high crown base height. In most timberlands and woodlands, fuelbreak construction consists of removing commercial-sized trees to achieve the desired spacing of stems and crowns. Subsequent steps may include biomassing (i.e., harvesting, chipping, and removal of small trees), piling and burning of branches and tops, and broadcast burning of residual ground fuels.

When a fire reaches a fuel break, its behavior quickly adjusts to reflect conditions within the fuelbreak. All measures of fire behavior severity, except rate of spread, are greatly reduced in fuelbreaks compared to untreated stands. A key indicator of fuelbreak effectiveness is its ability to prevent spot fires from igniting beyond the fuelbreak from aerial transport of embers. A fuelbreak about 1,300 feet wide is much more effective in preventing spot fires than one 300 feet wide. Fuelbreaks require periodic maintenance to retain their effectiveness. Unless maintained, hazards will often reach pretreatment levels within 10-30 years, depending on vegetation type and the type of treatment previously implemented.

To be most effective, fuelbreaks must be complemented by modifying fuels between fuelbreaks. Fuel reduction zones are areas where the continuity of hazardous fuels is interrupted to increase fire fighter safety and reduce the resistance of a fire to control. Fuel reduction zones are established primarily through prescribed burning.

Prescribed fire is usually an effective and economical method for maintaining desired hazard levels, although chemical control and hand and mechanical tree removal (i.e., thinning) are commonly used on forest lands. Other ways to control wildfires include residential fuel treatment consisting of fuel treatment on residential lots usually through hand or mechanical treatments and fuel reduction.

Although the frequency of catastrophic fires in California has increased over the past decade, loss of life resulting from wildfires is still a rare occurrence. The 1991 Tunnel Fire in Oakland and Berkeley resulted in at least 25 deaths, more than all other wildfires combined in California over the past 35 years. Other recent California fires that caused loss of life include the 1993 Malibu Fire (three lives lost), the 1990 Painted Cave fire near Santa Barbara (one life lost), the 1980 Panorama Fire near San Bernardino (four lives lost), the 1978 Kanaan Fire near Los Angeles (one life lost), and the 1970 Laguna Fire near San Diego (five lives lost). Wildfires also destroy property, vegetation, and timber resources.

Effect of Regulation 5 Amendments on Hazards

Regulation 5 currently treats certain fires set to prevent or reduce a fire hazard as "hazardous material" fires. Only fires set or approved by the public fire official in performance of official duties are allowed. In addition, fires that are conducted to dispose of materials generated from compliance with an order under Public Resource Code Section 4291 (which requires creation of firebreaks by means that can include burning) are treated as hazardous material fires.

The proposed amendments to Regulation 5 clarify, but do not change provisions regarding hazardous materials fires conducted to comply with Public Resources Code Section 4291. Although it is uncommon that fire is used to dispose of materials generated from the creation of a firebreak around private homes and other property at the urban wildland interface, fire may occasionally be used for this purpose. However, since the amendments do not change treatment of this type of fire, the amendments are not expected to have any effects on these fire hazards.

The amendments also do not affect hazardous materials fires if they are 10 acres or less in size or are used to dispose of materials from 10 acres of land or less.

The treatment of hazardous materials fires that are not conducted to comply with Public Resources Code Section 4291 or are greater than 10 acres in size, however, is changed by the amendments. There are very few fires that fall into this category. The hazardous material fire category was originally included in the regulation to address the occasional need to dispose of explosives and other dangerous flammable materials for which fire occasionally served as the lowest risk means of disposal. "Hazardous material" is defined in the regulation as material that may pose a fire or explosion hazard and as material generated from compliance with Public Resources Code Section 4291. The amendments would treat hazardous materials fires, except for those to comply with Section 4291 and those that are 10 acres in size or less, as prescribed fires subject to the acreage allocation system for that type of fire.

The effect of treating certain hazardous materials fires as prescribed fires is minor. The change would not affect fires set in parklands near urban areas such as within the East Bay Regional Park District in Alameda and Contra Costa counties and in parklands in Santa Clara County. These fires at the urban wildland interface may have as one of several objectives, the reduction of fuel loading and resulting fire hazards. However, they are currently treated as prescribed fires, not as hazardous materials fires, since they are usually primarily intended to improve wildlife habitat and are conducted under a burn plan. Because the amendments to Regulation 5 are not expected to change the amounts or types of prescribed fires (see the discussion under "Effect of

Proposed Amendments on Burning"), they are not expected to have any effect on these fires.

For those few hazardous materials fires that are not conducted to comply with Health and Safety Code Section 4291 and are not prescribed fires under the current regulation, the proposed amendments could have some effects. Because the amendments allocate a maximum acreage that can be burned each day, hazardous material may exist longer without being abated, that is, until the meteorological conditions are conducive for an acreage burning allocation. However, as any delay is anticipated to be an infrequent event, and hazardous material can be prevented from catching fire by other practices, such as by mechanical means or wetting, impacts are anticipated to be less than significant.

8. Hydrology and Water Quality

No construction is expected to result from the proposed amendments, so no impacts on drainage, groundwater, or risks to structures are anticipated. In addition, the open burning activities affected by the proposed amendments will not change the amount or types of open burning occurring or expected to occur in the District, or use any abatement equipment that might transfer air emissions to other media such as water. As a result, the proposed amendments are not expected to affect hydrology or water quality.

9. Land Use and Planning

No effect on land use planning is expected from the proposed amendments because they will not change the amount or types of open burning that are presently occurring in the District or the increases in prescribed burning that would have an impact on land planning issues. The proposed amendments also do not determine the way that agricultural or forest wastes are handled. Thus, no community would be physically divided, no conflict will be created with any applicable land use plan, policy, or regulation, and no conflict would be created with any applicable habitat or natural community conservation plan. Therefore, no significant impacts in this category are anticipated.

10. Mineral Resources

The proposed amendments will have no impacts on mineral resources because they are not expected to result in any construction. They will also not result in the loss of availability of any locally-important mineral resource or mineral resource recovery site. As such, no impacts on mineral resources are anticipated.

11. Noise

No effects on noise standards, exposure of people or workers to noise levels, or permanent and temporary noise level increases are expected from the proposed amendments since the proposal will not result in any construction. Therefore, no noise or vibration impacts are anticipated.

12. Population and Housing

No effect on population or housing is expected since the proposed amendments in no way affect population growth or related housing development.

13. Public Services

The public agencies affected by the proposed amendments are not expected to require any new or additional public services as a consequence of the proposed amendments. No effects on the need for public services such as police, fire, schools, or public roadway maintenance are expected either. Therefore, no significant impacts in this category are anticipated.

14. Recreation

The proposed amendments will not cause a decrease or increase in the use of parks and recreational facilities and they do not directly include recreational facilities or require construction or expansion of recreational facilities. The proposed amendments related to prescribed burning activities were developed to reduce potential smoke impacts in recreational areas and to augment efforts by state and federal resource management agencies to reduce wildfires and to improve air quality. Based on these considerations, no impacts in this category are anticipated due to the proposed amendments.

15. Transportation and Traffic

No construction is expected and no changes in transportation or pedestrian and vehicular circulation are anticipated from the proposed amendments.

16. Utilities and Service Systems

The proposed amendments will not change the amount or types of open burning that presently occur or are expected to occur in the District. No construction is expected from the proposed amendments. As such, there will be no impacts on water supplies, water treatment facilities, wastewater treatment facilities or related requirements, storm water drainage facilities, landfill capacities and any solid waste statute or requirement. Therefore, no impacts in this category are anticipated due to the proposed amendments.

17. Mandatory Findings of Significance

The proposed amendments are intended to enhance the District's open burning program through smoke management measures that were developed to continue to allow necessary open burning activities on days with appropriate meteorological conditions to reduce the potential smoke impacts and after due consideration of available alternatives to burning so that only minimal ecological impacts occur. Thus, the proposed amendments will not: (1) degrade the quality of the environment; (2) substantially reduce the habitat of fish or wildlife species; and (3) impact the range of a rare or endangered plant or animal. They will also not eliminate important examples of the major periods of California history or prehistory. The proposed amendments have no cumulative effects and will not cause substantial adverse effects on human beings.

Based on these considerations, no impacts related to mandatory findings are anticipated due the proposed amendments.